

# Integrating diarrheal disease and pneumonia control

PATH combines forces to tackle two leading killers of the world's poorest children

Worldwide, diarrheal disease and pneumonia are responsible for more than one-third of the deaths of children under age five. The vast majority of these deaths occur in low-resource countries, where poor sanitary conditions, unsafe drinking water, and limited access to lifesaving treatment place children at risk. Malnutrition also plays a role, as does misunderstanding among parents about the diseases' causes, symptoms, and proper treatments.

Most of these deaths are preventable—existing treatments for diarrhea and pneumonia are low-cost and effective, and many of the tactics needed to prevent one illness also help prevent the other. PATH is tackling the deadly duo with an integrated approach that emphasizes overlapping protection, the scale-up of proven methods, and the development of innovative new tools to fill deadly gaps.

## SUPPORTING A WINNING COMBINATION

PATH works with countries in sub-Saharan Africa and Asia to find and implement prevention and treatment strategies that are right for local settings. Through advocacy, we ensure that child health interventions are prioritized at the national level. We help governments develop policies for comprehensive diarrhea and pneumonia control, and we build the capacity of ministries of health and the various levels of health systems to deliver quality services.

Ultimately, our goal is to get lifesaving tools and approaches to the children who need them. We support education for caregivers so they know how to prevent diarrheal disease and pneumonia, are aware of danger signs should illness strike, and recognize when and how to seek help. We advocate for policy changes that improve the availability of oral rehydration solution (ORS) and zinc—key treatments for diarrhea—at the community level. And we support linkages with private-sector initiatives to give families access to improved sanitation, water filters, and clean cookstoves.

## ENCOURAGING HEALTHY HOUSEHOLDS

Prevention of both diarrheal disease and pneumonia requires safe water, basic sanitation, proper nutrition, and, for pneumonia, the reduction of household air pollution. We develop new and improved technologies, products, and design guidelines to make water safe to drink and improve hygiene, including easy-to-use and appealing household water filters, latrines, and hand-washing stations. Our integrated approach includes promotion of and education about breastfeeding and micronutrients like zinc, which play a vital role in boosting a child's defenses and preventing illness.

## SUCCESS STORIES

### A commitment to parents and children

PATH is committed to a world where no one has to bury a child because of diarrhea or pneumonia. Our Diarrheal Disease and Pneumonia Impact Initiative is harnessing our capabilities in the treatment and prevention of the two diseases to advance integrated approaches in Cambodia, Ethiopia, India, and Nigeria.



PATH/Eric Becker

We also partnered with the World Health Organization, UNICEF, and other global health leaders on a comprehensive framework called the Global Action Plan for the Prevention and Control of Pneumonia and Diarrhea. If access to cost-effective interventions for pneumonia and diarrhea continue to improve in the poorest communities around the world, we can save the lives of almost 2 million children by 2015.

Finding smart ways to get clean drinking water and safe sanitation into communities and homes is equally important. PATH builds the capacity of social entrepreneurs to use innovative sales and consumer financing approaches that enable low-income households to afford water-treatment products and sanitary latrines. Our commercial partners have met the needs of hundreds of thousands of families in Africa and Asia with these market-based approaches. We are now expanding the model to include clean energy products such as clean cookstoves.

#### ADVANCING THE DEVELOPMENT AND INTRODUCTION OF VACCINES

Vaccination is the best way to prevent rotavirus, which is the most deadly of the pathogens that can cause diarrhea. PATH is working on two fronts: making existing rotavirus vaccines more available while speeding up the development of new and more affordable rotavirus vaccines. We have also teamed up on vaccines that could prevent the leading bacterial causes of diarrheal disease, *Shigella* and enterotoxigenic *Escherichia coli* (ETEC).

Vaccines are also an important strategy for protecting children from *Streptococcus pneumoniae* (pneumococcus), which is the most common cause of severe pneumonia. We partner with scientists and manufacturers on affordable and effective vaccines to shorten the time it takes to develop and get pneumococcal vaccines to vulnerable children.

#### DEVELOPING NEW DIAGNOSTIC TOOLS

PATH is helping to meet the urgent need for new tools that diagnose pneumonia and identify the pathogens that cause diarrhea. For example, the current approach to diagnosing pneumonia in low-resource settings relies on a health worker's ability to visually count a child's breaths, which can be difficult.

With our partners at the University of Washington, we developed and designed a user-friendly application for mobile phones and tablets, called mPneumonia, which can help health providers detect and manage childhood pneumonia. The application incorporates Integrated Management of Childhood Illness guidelines with a manual respiratory rate counter and a pulse oximeter. The latter detects hypoxemia, an often-fatal complication of pneumonia.

#### IMPROVING CURRENT TREATMENTS AND DEVELOPING NEW ONES

ORS is a simple, inexpensive, and effective means to prevent the deadly dehydration caused by diarrhea, but fewer than half of children with diarrheal disease receive it. We're working with partners to improve the current ORS formulation so it promotes greater fluid and electrolyte absorption and reduces the duration of illness. By reducing diarrheal symptoms, we hope caregivers will see ORS as a crucial treatment for their child's diarrhea. We also work to develop new treatments to prevent dehydration and provide faster relief of diarrhea symptoms. For example, our investigational drug iOWH032 has the potential to be a first-in-kind drug designed to reduce fluid loss.

Similarly, the vast majority of pneumonia cases can be treated at the community level with the antibiotic amoxicillin, but only 30 percent of children with suspected pneumonia receive appropriate treatment. Furthermore, dosing requirements for amoxicillin are complicated, and caregivers often give incomplete doses without knowing it. PATH is identifying new product presentations for amoxicillin, such as packaging designs and user-friendly instructions, that will help providers dispense the medication appropriately and caregivers administer it properly.

#### Cambodia's two-in-one approach

Concerned about the high toll of pneumonia and diarrheal disease in Cambodia, PATH devised a two-in-one approach that integrates pneumonia and diarrheal disease control from the national to the village level. We helped the government of Cambodia draft a policy that incorporates up-to-date prevention and treatment, health worker training, and easier access to treatment. For example, parents of children with diarrhea can now get oral rehydration therapy and zinc directly from village health volunteers.



PATH/Heng Chivon

We then piloted the approach in one province, and it worked: fewer children are arriving at hospitals with severe dehydration or pneumonia. Now we are partnering with Cambodia's Ministry of Health to take the model nationwide.



PATH is an international health organization that drives transformative innovation to save the lives of women and children. We accelerate innovation across five platforms—vaccines, drugs, diagnostics, devices, and system and service innovations—that harness our entrepreneurial insight, scientific and public health expertise, and passion for health equity. By mobilizing partners around the world, we take innovation to scale, working alongside countries primarily in Africa and Asia to tackle their greatest health needs. Together, we deliver measurable results that disrupt the cycle of poor health.

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